We claim :

1. A method of gathering data related to signal quality of multiple optical signals transmitted to a node in an optical network using an optical carrier, the method comprising:
   a) receiving the optical carrier and said multiple optical signals at said node;
   b) scanning a specific wavelength band of said optical carrier for signal characteristics of a specific optical signal, said wavelength band being substantially centered around a wavelength used by said specific optical signal
   c) repeating steps a) and b) for each of said multiple optical signals

2. A method as in claim 1 wherein step b) is accomplished by using a tunable optical filter.

3. A method as in claim 1 wherein said wavelength used by said specific optical signal is determined according to a predetermined standard.

4. A method of determining signal quality of at least one optical signal transmitted to a node in an optical network using an optical carrier, the method comprising:
   a) gathering data related to signal quality for said at least one optical signal;
   b) processing said data to determine signal quality parameters of said at least one optical signal;
   c) retrieving signal quality references from a location logically remote from said node;
   d) comparing said signal quality parameters with said signal quality references

5. A method as in claim 4 wherein step a) comprises:
   a1) receiving the optical carrier and said at least one optical signal at said node;
   a2) scanning a specific wavelength band of said optical carrier for signal characteristics of said at

least one optical signal, said wavelength band being substantially centered around a wavelength used by said at least one optical signal

6. A method as in claim 5 wherein step a2) is accomplished using a tunable optical filter.

7. A method as in claim 4 wherein said signal quality references are retrieved from an optical network terminal.

8. A method as in claim 5 wherein said wavelength used by said at least one optical signal is determined according to a predetermined standard.

9. A method of automatically determining if a laser transmitter is malfunctioning, the method comprising:

a) receiving at a node an optical carrier having multiple optical signals;

b) scanning a specific wavelength band of the optical carrier to determine an actual wavelength at which an optical signal under observation is being transmitted, the specific wavelength band being centered at a predetermined reference wavelength, the predetermined reference wavelength being a theoretical wavelength at which the optical signal under observation is supposed to be transmitted, the optical signal under observation being one of the multiple optical signals;

c) comparing the actual wavelength with the reference wavelength;

d) storing differences between the actual wavelength and the reference wavelength

e) repeating steps b) to d) for a plurality of the multiple optical signals

f) determining if the differences stored in step d) are uniform for each of the plurality of multiple optical

signals.

10. A method as in claim 9 wherein the scanning in step b) is accomplished by using a tunable optical filter.

11. A method as in claim 9 wherein, for step f), if the differences are not uniform for each of multiple optical signals, an alarm is generated.

12. An optical network component having a tunable optical filter, the optical component gathering optical signal data using the optical filter by the following method:

a) receiving an optical carrier and multiple optical signals;

b) scanning a specific wavelength band of said optical carrier for signal characteristics of a specific optical signal, said wavelength band being substantially centered around a wavelength used by a specific optical signal

c) repeating steps a) and b) for each of said multiple optical signals

wherein step b) is executed using the optical filter.

13. An optical network component as claimed in claim 12 wherein the component performs at least one other function chosen from the group comprising:

- optical signal amplification
- optical signal attenuation
- optical signal processing
- addition of optical signals
- deletion of at least one optical signal from the optical carrier
- retransmission of the optical carrier in the manner of an optical repeater.

14. Computer readable media containing computer readable and executable code for controlling a portion of an optical network component, said computer readable and executable code executing a a method of gathering data related to signal quality of multiple optical signals transmitted using an optical carrier to a node at an optical network, the method comprising:

a) receiving the optical carrier and said multiple optical signals at said node;

b) scanning a specific wavelength band of said optical carrier for signal characteristics of a specific optical signal, said wavelength band being substantially centered around a wavelength used by said specific optical signal

c) repeating steps a) and b) for each of said multiple optical signals.

15. Computer readable media as claimed in claim 14 wherein step b) is accomplished by using a tunable optical filter.

16. A method of self-calibration for use on an optical network node which monitors optical traffic on an optical network, the method comprising:

a) receiving at the node an optical carrier having multiple optical signals

b) retrieving a predetermined reference wavelength from a logically remote location, the predetermined reference wavelength being a theoretical wavelength at which an optical signal under observation is supposed to be transmitted, the optical signal under observation being one of the multiple optical signals;

c) determining an actual wavelength at which the optical signal under observation is being transmitted;

d) comparing the actual wavelength with the reference wavelength;

e) storing differences between the actual wavelength and the reference wavelength

f) repeating steps b) to e) for a plurality of the multiple optical signals

g) determining if a magnitude of the differences stored in step e) are uniform for each of the plurality of multiple optical signals

h) if the magnitude of the differences are uniform, adjusting subsequent wavelength measurements by a specified amount, said specified amount being determined by the magnitude of the differences.

17. A method as in claim 14 wherein step c) is accomplished using a tunable optical filter to scan a specific wavelength band of the optical carrier, said specific wavelength band being centered at the predetermined reference wavelength.

18. An optical network component to be used with a network node for monitoring network traffic, said component comprising:

- a tunable optical filter receiving an optical carrier from said node, said optical carrier carrying a plurality of optical signals;

- an optical detector receiving a filtered optical signal from said tunable optical filter;

- an internal controller coupled to and controlling said filter and said detector, said controller receiving an output of said detector for processing;

wherein

- said controller determines signal characteristics of a specific optical signal based on said output of said detector, said specific optical signal being one of said plurality of optical signals.

19. An optical component as claimed in claim 17 wherein said filter receives said optical carrier through a network optical switch, said switch being coupled to at least one optical tap on an input or an output line of said node such that said component can be coupled to any input or output line of said node.